EFFECT OF VARIABLES ON SOLUBLE MOLYBDENUM

EFFECT OF FINAL TITRATED ACID ON SOLUBLE MOLYBDENUM
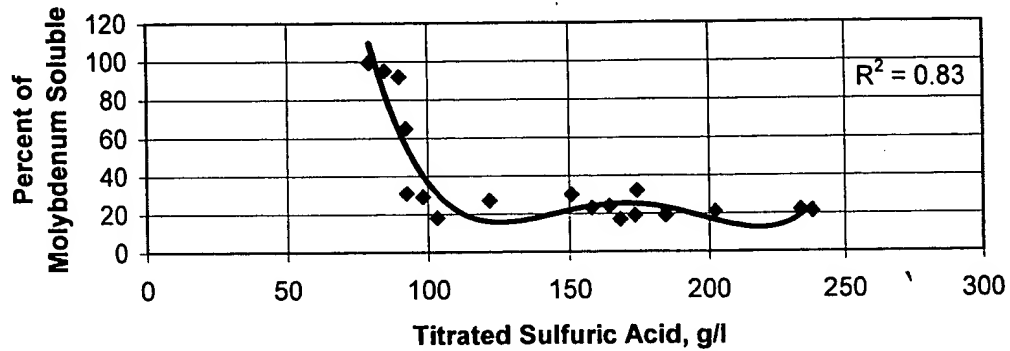
$R^2 = 0.83$

FIG. 1a

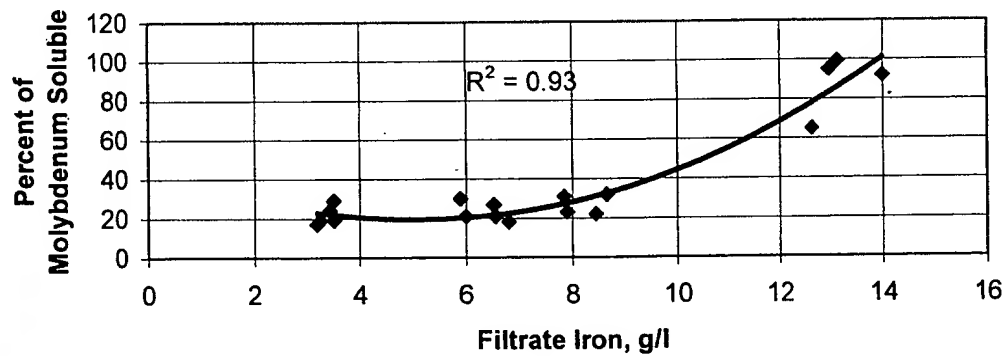## EFFECT OF SOLUBLE IRON CONCENTRATION ON SOLUBLE MOLYBDENUM

$R^2 = 0.93$

FIG. 1b

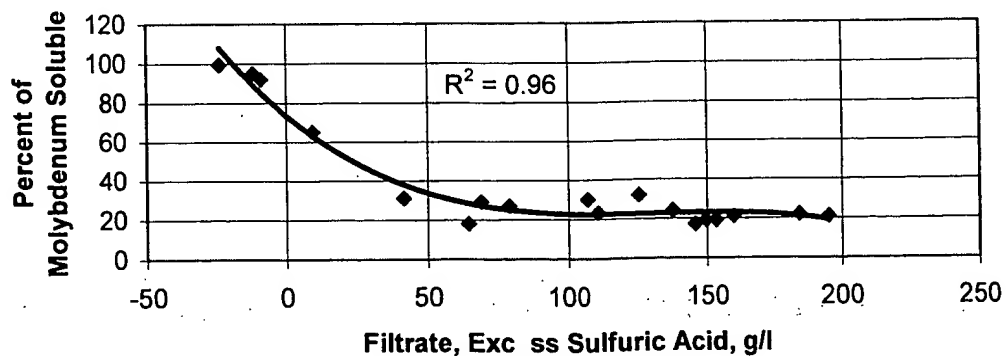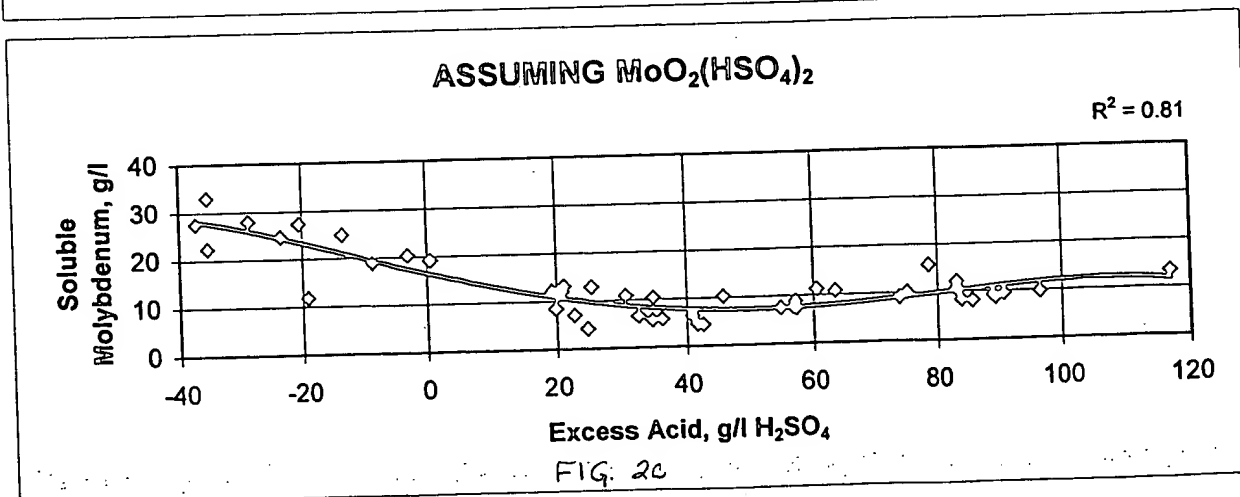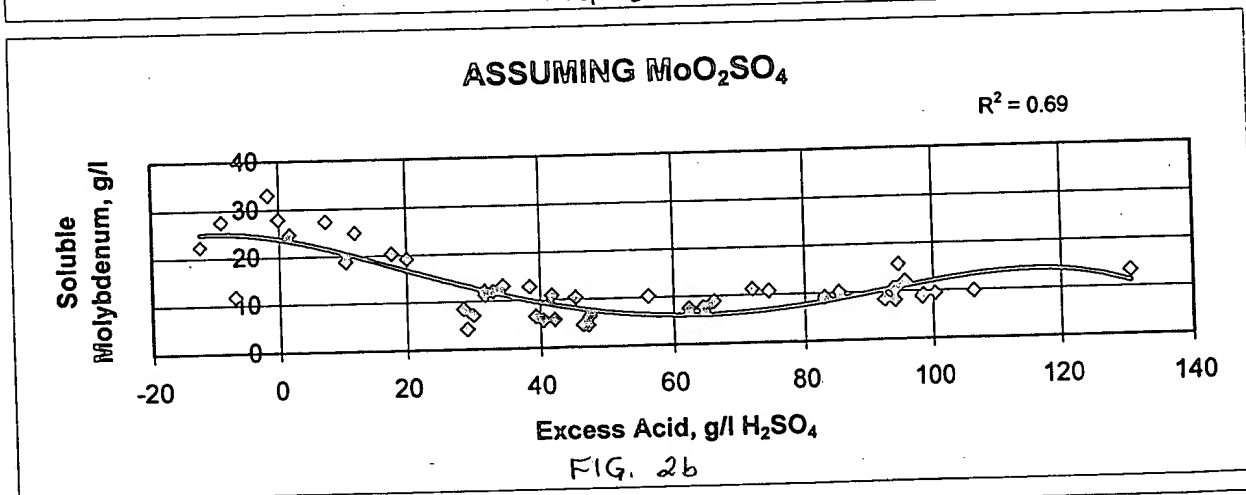## EFFECT OF EXCESS SULFURIC ACID CONCENTRATION ON SOLUBLE MOLYBDENUM

$R^2 = 0.96$

FIG. 1c

EFFECT OFF EXCESS ACID IN FILTRATE
ON SOLUBLE MOLYBDENUM

ASSUMING H_2MoO_4

$R^2 = 0.42$

Filtrate Molybdenum, g/l

Excess Acid, g/l H_2SO_4

FIG. 2a

ASSUMING MoO_2SO_4

$R^2 = 0.69$

Soluble Molybdenum, g/l

Excess Acid, g/l H_2SO_4

FIG. 2b

ASSUMING $MoO_2(HSO_4)_2$

$R^2 = 0.81$

Soluble Molybdenum, g/l

Excess Acid, g/l H_2SO_4

FIG. 2c
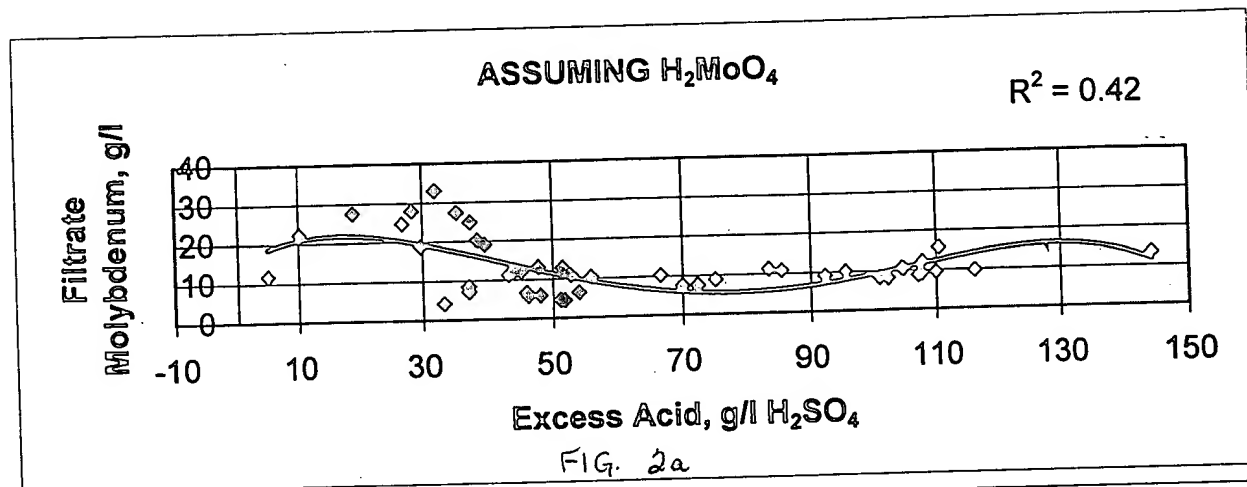
TITRATED ACID vs EXCESS ACID

Line, if identical

$y = 0.9483x - 56.425$
$R^2 = 0.732$

Excess Acid, g/l H2SO4

Titrated Acid, g/l H2SO4
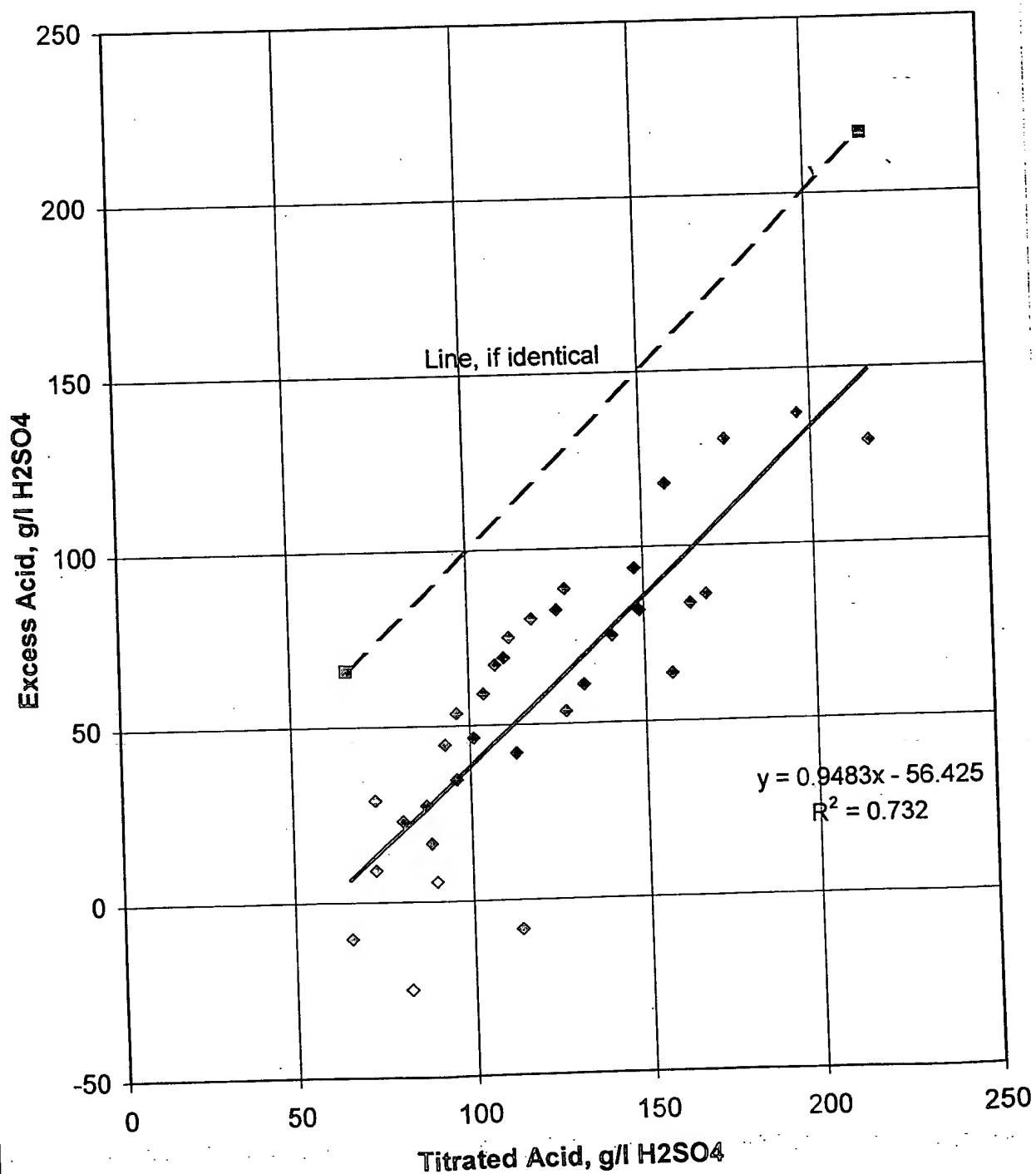
FIG. 3

MODEL TO PREDICT SOLUBLE MOLYBDENUM AFTER PRESSURE OXIDATION OF MOLYBDENITE

Concentrate and recycle entries are moles added per liter of initial autoclave slurry.

Concentrate

Moles Mo ("A")	0
Moles Cu ("B")	0
Moles Fe ("C")	0

Net acid from concentrate, mol/l ("H")   0.000

Recycle Solution

Moles Mo ("D")	0
Moles Cu ("E")	0
Moles Fe ("F")	0
Moles H2SO4 ("G"	0

Excess acid, mol/l ("I")   0.00
Gross initial acid, mol/l ("J")   0.00
Predicted g/l Fe ("K")   0.00

Initial prediction, Mo g/l ("L")   22.59

If all MoS2 soluble, g/l Mo ("M")	0
Mo from MoS2 precipitated, g/l ("N")	-22.59
Percent precipitated ("O")	#DIV/0!
Acid from addl pptn, mol/l ("P")	#DIV/0!
Gross excess acid, mol/l ("Q")	#DIV/0!
Final predicted Mo g/l ("R")	#DIV/0!
Corrected so solubility does not exceed "M", "S"	#DIV/0!

Formulae used in calculations

"H"   - ("B" * 3) - (("C" - "B") * 0.5) + ("A" * 0.2 * 2) + ("C" * 0.3 * 3)
"I"   ("G" + ((3 * "D") - (2 * "E") - (3 * "F")) / 2)
"J"   "I" + "H"
"K"   (("C" * 0.7) + "F") * 55.85
"L"   (-10.369 * ("J" ^ 3)) + (38.992 * ("J" ^ 2)) + (-46.065 * "J") + 25.892 + ("K" / 3) - 3.3
"M"   "96 * "A"
"N"   "M" - "L"
"O"   "N" / "M"
"P"   ("O" - 0.2) * (A * 4 / 2)
"Q"   "I" + "C" + "P"
"R"   (-10.369 * ("Q" ^ 3)) + (38.992 * ("Q" ^ 2)) - (46.065 * "Q") + 25.892 + ("K" / 3) - 3.3
"S"   if("R" > "M", "M", "R")

Note: Functions in the equations are spreadsheet style, I.e., * is times, / is divide, ^ to the power
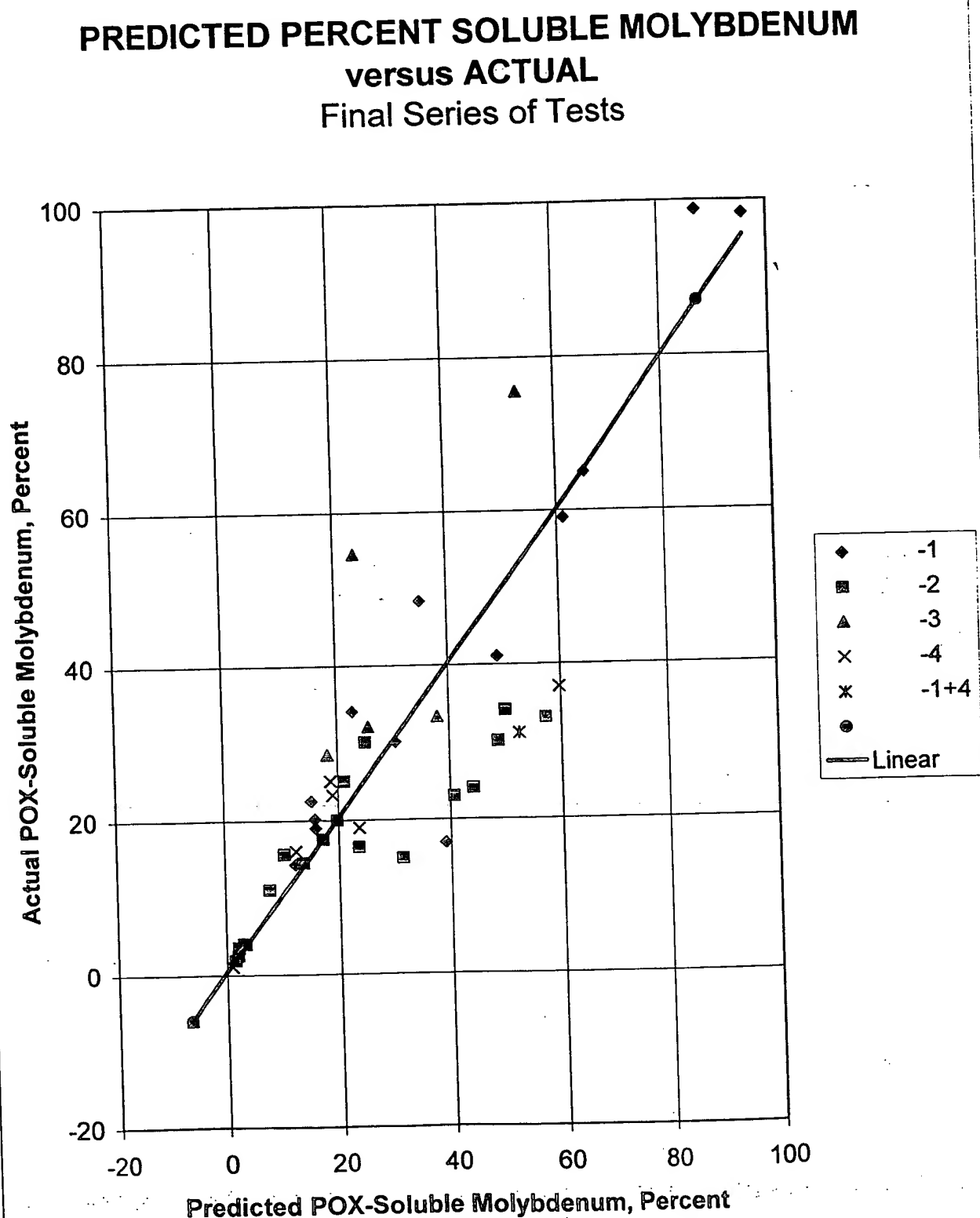
FIG. 4

PREDICTED PERCENT SOLUBLE MOLYBDENUM
versus ACTUAL
Final Series of Tests

FIG. 5